

FACTORS AFFECTING LIQUIDITY COVERAGE RATIO (LCR) AS IMPLEMENTATION OF BASEL III IN THE BANKING SECTOR

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Abstract: This study aims to examine and analyze the effect of Return On Assets (ROA), Capital Adequacy Ratio (CAR), Operational Costs to Operating Income (OCOI), Non Performing Loans (NPL), Third Party Funds (TPF) and bank size on Liquidity Coverage Ratio (LCR) in the banking sector. The population of this study are banks that are required by the Financial Services Authority to calculate and publish LCR reports on a quarterly basis in 2017-2018 which includes banks BOOK 4, BOOK 3 and foreign banks. The population of this research is 33 banks. The sample selection using purposive sampling method with the selected sample is 23 banks. Processing data using panel data regression statistical test methods. The results of this study indicate ROA, CAR, OCOI, NPL, TPF and bank size simultaneously affect LCR. NPL partially has a negative and significant effect on LCR. ROA, OCOI, TPF and bank size variables have positive but not significant effect on LCR. CAR variable has a negative but not significant effect on LCR.

Keywords: Return On Assets, Capital Adequacy Ratio, Operational Costs to Operating Income, Non Performing Loans, Third Party Funds, Bank Size and Liquidity Coverage Ratio.

1. INTRODUCTION

One of the banking sector crises that caused the global financial crisis was the crisis in 2008. The crisis has become a very valuable lesson for banks and other financial institutions. The lesson shows that strong capital alone is not enough for banks to be able to survive in a crisis if it is not accompanied by adequate liquidity (Financial Services Authority, 2014). Based on these conditions, it is the background of the importance of a standard measurement of the minimum level of liquidity that banks must have as an anticipatory step in dealing with a crisis. So far there are only rules governing minimum level measurement standards for capital. BCBS (Basel Committee on Banking Supervision) as a cooperation forum for central banks from countries in the world has issued banking regulations in Basel Accord III. Basel III introduces one of the global liquidity standards known as Liquidity Coverage Ratio (LCR). BCBS has published the final document on the LCR calculation framework in January 2013 (Consultative Paper of the Financial Services Authority, 2014). The LCR framework which is part of the Basel III framework was also adopted by the Indonesian state as a member of BCBS. The Financial Services Authority has also issued POJK no. 42 / POJK.03 / 2015 concerning Obligations to Fulfill Liquidity Adequacy Ratios (LCR) for Commercial Banks. Based on the POJK, the minimum LCR ratio reaches 100%. The category of banks required to carry out LCR calculation and reporting are BOOK 4, BOOK 3 banks and foreign banks.

Table 1 Average LCR Ratio for Indonesian Banking Quarterly for the Period of 2017 to 2018 (%)

No	Categories	Period							
		2017				2018			
		Mar	Jun	Sep	Des	Mar	Jun	Sep	Des
1	BOOK 3	159	151	151	148	162	153	133	143
2	BOOK 4	217	229	234	241	222	217	200	203
3	Foreign Bank	215	186	198	226	234	205	192	210
	LCR Average	197	187	194	205	206	192	175	185

Source: Financial Services Authority Banking Industry Profile Report (data processed, 2019)

Information:

BOOK 3: Banks with core capital of IDR 5 to 30 trillion.

BOOK 4: Banks with core capital of IDR 30 trillion and above

From table 1 it can be seen that banks required by the OJK already have an average LCR ratio above 100%. In accordance with POJK, the deadline for fulfilling the required LCR at least 100% is reporting in December 2018.

The development of the average ROA of BOOK 4 and BOOK 3 banks in the 2017 quarter to 2018 quarter period is presented in Figure 1. The average ROA bank BOOK 4 is higher than the average ROA bank BOOK 3 data. The average ROA bank BUK 4 bank tends to increase, while the average ROA bank BOOK 3 tends to decrease.

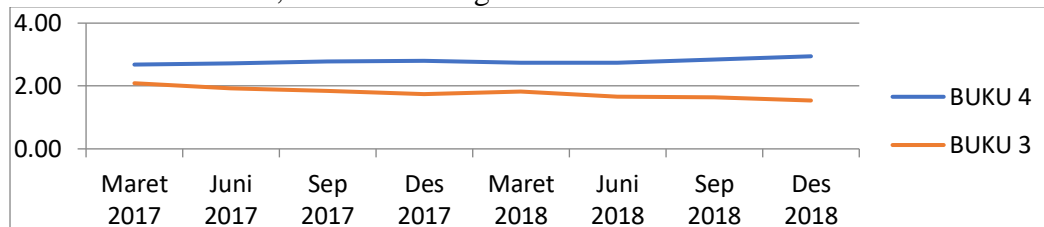


Figure 1 Graph of Average ROA of BOOK 4 & BOOK 3 Banks Quarterly Period 2017 to 2018.

The movement of the average CAR of BOOK 4 and BOOK 3 banks is illustrated through Figure 2. The average CAR value of BOOK 4 banks fluctuated, namely an increase from the position of March 2017 to September 2017 then decreased until the position in June 2018. In the period of June 2018 the average CAR of Book 4 began to increase. The average CAR bank BOOK 3 data shows a graph that tends to decline until the position in September 2017 even though it had risen until December 2017 and has decreased again.

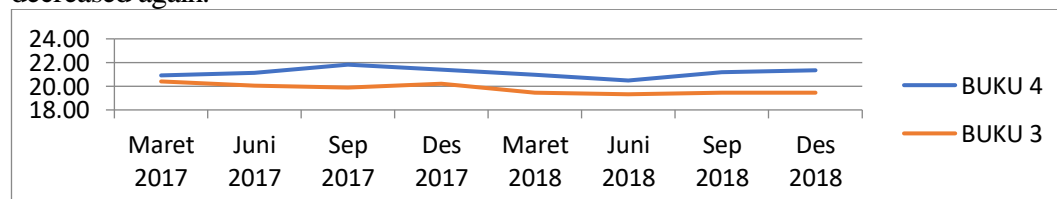


Figure 2 Graph of CAR Average of BOOK 4 & BOOK 3 Banks Quarterly Period 2017 to 2018

The average development of OCOI banks BOOK 4 and BOOK 3 banks is presented in figure 3. The average OCOI bank BOOK 4 is lower than the average OCOI bank BOOK 3 which shows a more efficient management of BOOK 4 bank costs. The average OCOI bank BUKO 4 data tends to show a decline. The OCOI Bank BOOK 3 data average has increased from the period March 2017 to December 2017, fell in the next quarter period and then moved up again.

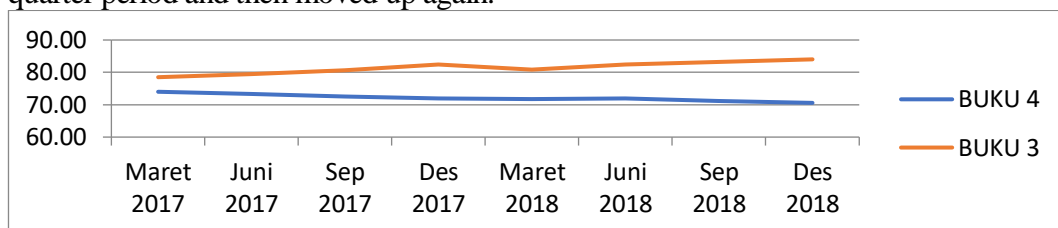


Figure 3 Average OCOI Charts for BOOK 4 & 3 Banks for the 2017 to 2018 Quarterly Periods

Based on Figure 4, the average NPL of BOOK 4 and BOOK 3 banks tends to decrease. This shows that the quality of the productive assets of BOOK 4 and BOOK 3 banks is getting better. Banks are more prudent in applying the principle of prudence in the process of lending and are supported by the country's economic situation in stable condition.

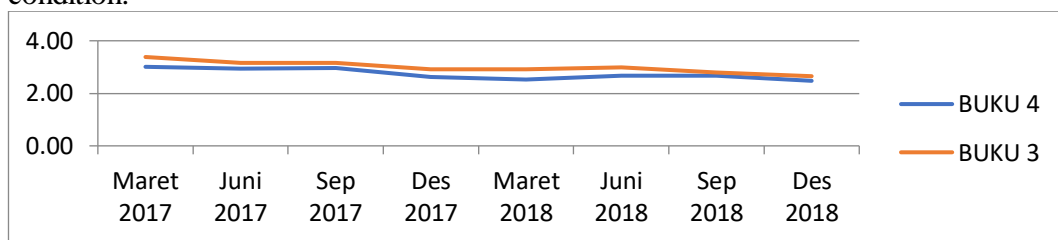


Figure 4 Graph of Average NPL of BOOK Bank 4 & 3 Quarterly Period 2017 to 2018

The average movements of TPF banks BOOK 4 and BOOK 3 for the quarterly period 2017 to 2018 are presented in Figure 5. The average TPF tends to increase from quarter to next quarter. In BOOK 4 banks, the average increase in deposits was more fluctuating than BOOK 3 banks, where the average TPF BOOK 3 showed a steady increase.

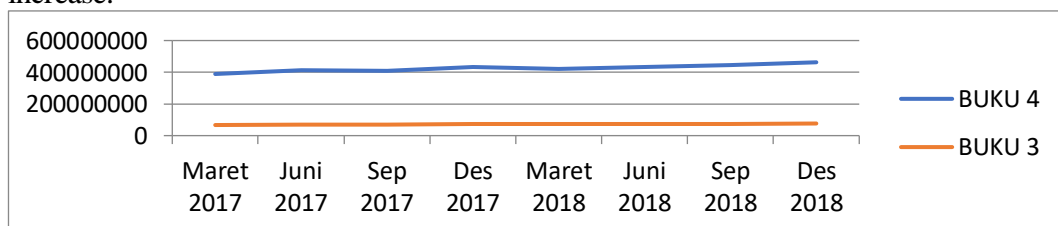


Figure 5 The Average Chart of TPF Banks BOOK 4 & BOOK 3 Quarterly Period 2017 to 2018

The development of the average bank size of BOOK 4 and BOOK 3 banks in the quarterly period 2017 to 2018 is presented in Figure 6. The average of bank size shows an increase, although not significant. The increase in the average bank size of Bank BOOK 3 is more stable compared to the average bank size of Bank BOOK 4. The average bank size of Bank BOOK 4 shows a more volatile movement in its increase.

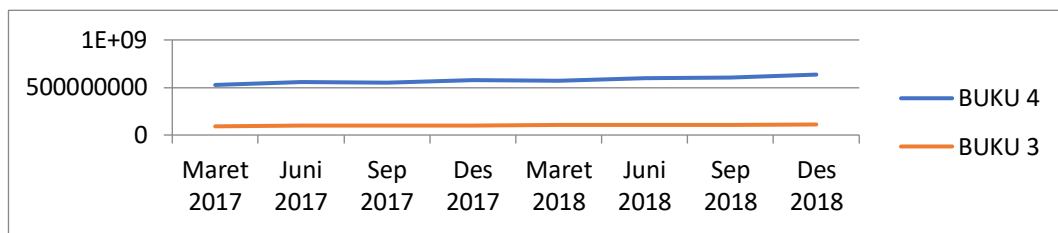


Figure 6 Average Graph of Bank Size Banks BOOK 4 & BOOK 3 Period Quarterly 2017 to 2018

2. LITERATURE RIVIEW

2.1 Theoretical Basis

Agency Theory

Agency theory states that there are differences in the interests of the principal and the agent. Based on this theory bank management as an agent has the potential to focus more on achieving success indicators as management with one of the indicators of achievement being high bank profits. Bank management tends to channel liquid assets into productive loans rather than holding them as liquidity reserves. If liquidity management is not done carefully in the long run, it will potentially pose a risk to the continuity of the bank's business. This will interfere with the interests of shareholders as the principal for the achievement of profits and ensuring the survival of the bank.

Commercial Loan Theory

This theory was introduced by Adam Smith through his book *The Wealth of Nations* published in 1776. The theory states that banking liquidity will be maintained if banks provide short-term credit and that credit is productive credit. Short-term credit has a liquid nature or is very easy to be disbursed. Payment of creditors for these short-term loans is a source of liquidity.

Doctrine of Asset Shiftability

This theory states that the source of banking liquidity can be obtained from the payment of a type of credit called shiftable loan or call loan. Shiftable loan or call loan is a type of credit guaranteed by securities which must be paid with notification one or several days in advance. The source of credit payments is in the form of direct payments from creditors or indirectly by shifting credit to other banks. If credit cannot be repaid, the bank can sell collateral in the form of securities as a source of credit payment.

Theory of Shiftability to The Market

This theory assumes that bank liquidity will be maintained if the bank has a portfolio of securities. Marketable securities are categorized as liquid assets because they can be immediately transferred to cash or cash equivalents. Marketable securities owned by banks can be sold immediately if banks experience liquidity shortages.

The Anticipated Income Theory

The background to the emergence of The Anticipated Income Theory is the low credit portfolio in the banking world. This results in banks having excess liquidity and low bank income levels. To overcome this problem, this theory suggests that

banks should extend long-term credit to the public by paying the principal and interest on the system in accordance with the time schedule specified.

2.2 Study Literature

Liquidity Coverage Ratio (LCR)

Based on POJK no. 42 / POJK.03 / 2015t, LCR or liquidity adequacy ratio is calculated with total High Quality Liquid Assets (HQLA) compared to total net cash outflows in the next 30 days under stress scenarios. Related research liquidity with the dependent variable with LCR has not been done much. One of the previous studies related to liquidity with the dependent variable LCR is Cucinelli's study (2013) which states bank size, bank specialization has a significant negative effect on LCR. The variable loan loss reserve ratio, GDP, crisis have a significant positive effect and bank capitalization, bank listed and inflation have no significant effect. In addition, research related to liquidity with the dependent variable besides LCR has been widely carried out including research by Moussa (2015), Singh & Sharma (2016), Al-Homaidi et.al (2019), Mazreku et. al (2019), Ahmad & Rasool (2017), Choon et. al (2013), Luvuno (2018), Diep & Nguyen (2017), Cucinelli (2013), Chaarani (2019), Dutta (2018), Bonner et. al (2013), Gautam (2016), Al-Harbi (2017), Melese & Laximikantham (2015), Mustika & Kusumastuti (2015)

Return On Asset (ROA)

According to Singh and Sharma (2016), ROA is a financial ratio that describes the percentage of profit generated by banks compared to total assets. The high level of ROA shows a bank has a good ability in managing assets in achieving profit. Banks face a dilemma between the choice to become a liquid bank or make a profit (Harbi, 2017). This condition produced several theories and studies to explain the effect of profitability on liquidity.

Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio is the ratio of capital that must be maintained by banks for the absorption of risks that arise in accordance with capital adequacy policies (Singh and Sharma, 2016). According to the two researchers, the value of CAR has a significant impact on banks because banks' CAR ratios are needed more to overcome liquidity shortages. This has the role of stabilizing and restoring banks in the event of a crisis.

Operating Costs Compared to Operating Income (OCOI)

The OCOI ratio is the level of efficiency of a bank in running its core business to generate revenue mainly derived from credit income (Wibowo and Syaichu, 2013). Inefficient operational management causes the OCOI ratio to be high. Inefficient operations incur large costs for income. In collecting funds from the public, banks generally emphasize collecting cheap funds such as savings and current accounts. Determination of loan interest is also influenced by the cost of deposit interest which is used as the basis for determining the expected interest spread.

Non Performing Loans (NPL)

One of the biggest risks experienced by banks is credit risk. Credit risk is the risk caused by the debtor's failure to repay credit on time. The indicator used to assess bank credit risk is known as the NPL ratio. NPL is a comparison between the number of problem loans and the total loans provided by banks.

Third Party Funds (TPF)

Third party funds (TPF) are the main source of bank funding (Singh and Sharma (2016)). Therefore, banks are required to maintain adequate liquidity to meet the withdrawal of customer funds. According to Dendawijaya (2003) third party funds are deposit funds originating from the public Managed by banks The amount of third party funds is calculated from the amount of third party funds on the bank balance sheet which includes the amount of savings, current accounts and deposits Based on research by Moussa (2015), Singh & Sharma (2016), third party funds variable is proxied by total third party funds divided by total assets. it also uses the TPF variable divided by total assets.

Bank Size

According to Choon et al. (2013), bank size is broadly defined as total net assets. The high and low levels of operating activities and corporate investment can be measured by the total number of assets owned. In general, the greater the size of the company, which is reflected in the number of assets, the greater the operations and investment activities. Operating and investment activities directly affect the liquidity of the company. According to research by Moussa (2015), Mustika & Kusumastuti (2015), Singh & Sharma (2016), Hormaidi et. al (2019), Ahmad & Rasool (2017), Choon et. el (2013), bank size is proxied by the natural logarithm of total assets. In this study, bank size is also proxy with the natural logarithm of total assets. The total asset figure is found in the bank's balance sheet financial statements.

2.3 CONCEPTUAL FRAMEWORK AND HYPOTHESIS

The research conceptual framework describes the relationship between the dependent and independent variables. This research conceptual framework is illustrated in Figure 7 below:

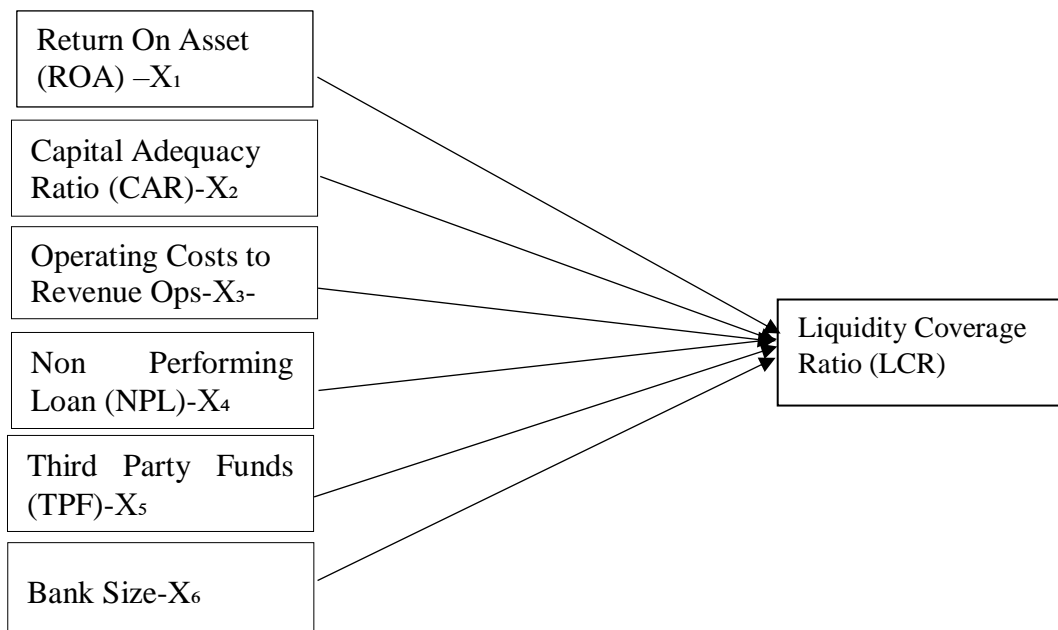


Figure 7 Conceptual Framework

The Effect of Return on Assets (ROA) on Liquidity Coverage Ratio (LCR)

Based on Agency Theory, it can be interpreted that management will tend to increase profitability by allocating liquidity to productive assets. Liquidity reserves will be further reduced by channeling it into productive assets. This shows ROA is inversely proportional to LCR. Based on the description above, the first hypothesis of this study is:

H₁: Return On Assets (ROA) has a negative effect on Liquidity Coverage Ratio (LCR)

The Effect of Capital Adequacy Ratio (CAR) on Liquidity Coverage Ratio (LCR)

In terms of capital, according to Agency Theory, it can be interpreted that the large capital invested by shareholders will encourage bank management to retain less liquidity. This is because bank management assumes that losses or risks caused by lack of liquidity can be covered by large capital without having to have large liquidity reserves. The capital function is used as a buffer to overcome losses if it occurs in a bank. Based on the description that has been presented above, the second hypothesis of this study is:

H₂: Capital Adequacy Ratio (CAR) has a negative effect on Liquidity Coverage Ratio (LCR)

The Effect of Operating Costs on Operating Income (OCOI) on Liquidity Coverage Ratio (LCR)

Interest costs are one component of the OCOI calculation. Liquidity that is too high will result in higher costs for banks (Latumaerissa (2014)). High liquidity is assumed to be formed from long-term funds. Interest rates for long-term funds are generally higher than short-term funds. Issued to finance long-term savings is directly proportional to liquidity. Based on the theory, the interim conclusions that can be drawn is:

H₃: Operational Costs Operating Income (OCOI) has a positive effect on Liquidity Coverage Ratio (LCR).

The Effect of Non Performing Loans (NPL) with Liquidity Coverage Ratio (LCR)

The size of the NPL indicates the level of productive or not credit given to debtors. If the NPL ratio numbers get bigger, the greater the funds allocated to overcome the losses caused by bad loans, which in turn will reduce liquidity. The level of costs allocated to cover bank losses due to bad credit is known as Allowance for Impairment Losses (AIL).

Commercial Loan Theory states that banking liquidity will be maintained if banks provide short-term credit and that credit is productive credit. Payment of creditors for these loans is a source of liquidity. However, high NPLs will result in disrupted sources of liquidity because credit payments are getting longer and even not obtained at all. Based on the description above, the fourth hypothesis of this study is:

H₄: Non Performing Loans (NPL) have a negative effect on Liquidity Coverage Ratio (LCR)

Effect of Third Party Funds (TPF) on Liquidity Coverage Ratio (LCR)

A large level of TPF can be used as a source of large loans. Large loans generally have a longer term than small loans. The Anticipated Income Theory states that liquidity will be maintained when banks extend long-term loans to the public by paying off the principal and interest. The installment payment schedule from the debtor will provide regular cash flow as a source of liquidity for the bank. Based on the description above, the fifth hypothesis is as follows:

H₅: Third Party Funds (TPF) has a positive effect on Liquidity Coverage Ratio (LCR)

Effect of Bank Size on Liquidity Coverage Ratio (LCR)

Theoretically, a bank's liquidity is associated with a bank size where the larger the size of a bank, the greater its business activities are at risky activities which in the long run require banks to have significant liquid assets as liquidity reserves (Luvuno, 2018). This significant level of liquid assets is used to meet higher loan demands and unexpected withdrawals of public funds. The Anticipated Income Theory states that liquidity will be maintained when banks extend long-term loans to the public by paying off the principal and interest. Long-term loans are a component of bank assets. Long-term loans generally have large ceilings, so the greater the size of the bank. Based on the description above, the sixth hypothesis is as follows:

H₆: Bank Size has a positive effect on Liquidity Coverage Ratio (LCR).

3. RESEARCH METHODS

The design of this research is causal research because this research aims to test hypotheses and identify causal relationships between variables. The data analysis technique used in this study is the panel data regression model. The statistical test tool used was Eviews 8.

4. RESULTS AND DISCUSSIONS

4.1 Chow Test

Chow test results are drawn according to table 2 as follows

Table 2 Chow Test Results

Effects Test	Statistic	d.f.	Prob.
<i>Cross section F</i>	45.534709	(22,155)	0.0000
<i>Cross section Chi-square</i>	369.831953	22	0.0000

Source: Output of Eviews Data Processing Results 8

Chow test results in table 5.1 show the probability value is 0.0000 where <0.05 so that the more appropriate estimation model is the fixed effect model compared to the common effect model.

4.2 Hausman Test

Hausman test results show the probability value is 0.3425 where >0.05 so that the more appropriate estimation model is the random effect model compared to the fixed effect model. The classic assumption test is not performed because the model chosen is the Random Effect Model.

4.3 Hypothesis test

The results of hypothesis testing using the random effect model are presented in table 3

Table 3 Statistical values from the F test, t test and the coefficient of determination

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-285,2461	349,1795	-0,816904	0,4151
X1	4,956951	16,16854	0,306580	0,7595
X2	-1,249795	2,405094	-0,519645	0,6040
X3	1,226934	1,521458	0,806420	0,4211
X4	-12,23093	4,673829	-2,616897	0,0096
X5	151,3497	103,8661	1,457162	0,1468
X6	17,58722	16,26616	1,081215	0,2811
R-squared	0.072423	Mean dependent var		25,42927
Adjusted R-squared	0,040980	S.D. dependent var		35,15826
S.E. of regression	34,43033	Sum squared resid		209824,3
F-statistic	2,303300	Durbin-Watson stat		1,214676
Prob(F-statistic)	0,036344			

4.4 F Test Results (Simultaneous Test)

The F test aims to test whether all the independent variables in the model simultaneously or jointly affect the dependent variable. Based on table 3 it can be concluded that the variables ROA, CAR, OCOI, NPL, TPF and bank size simultaneously affect the LCR because the significance value is 0.036344

4.5 T Test Results (Partial Test)

T test aims to examine the effect of independent variables including ROA, CAR, OCOI, NPL, TPF and bank size partially on the LCR dependent variable. Based on table 5.3, the regression equation is:

$$Y_{it} = -285.24 + 4.95X_{1it} - 1.24X_{2it} + 1.22X_{3it} - 12.23X_{4it} + 151,34X_{5it} + 17.58X_{6it}$$

Based on the results of the t test (partial test) partially NPL has a negative and significant effect on LCR. ROA, OCOI, TPF and bank size variables have positive but not significant effect on LCR. CAR variable has a negative but not significant effect on LCR.

4.6 Results of the Determination Coefficient Analysis

Based on table 5.3 the value of R square is 0.072 which means that the variable ROA, CAR, OCOI, NPL, TPF and bank size can only explain the LCR variable of 7.2% and 92.8% explained by other factors.

4.7 Results and Discussion

Effect of Return on Assets (ROA) on Liquidity Coverage Ratio (LCR)

The results showed that ROA has a positive and not significant effect on LCR. This is not in accordance with the first hypothesis in this study, that ROA has a negative effect on LCR. The results of this study differ from the theory known as

the liquidity vs profitability dilemma which states profitability is inversely proportional to liquidity (Siamat, 2005).

In terms of profitability, the agency theory previously described can mean that management tends to hold less liquidity by channeling it to productive assets to achieve high profits without regard to liquidity risk that may occur. But the results of the study showed different things. One reason is estimated because the NPL level of BOOK 4 and BOOK 3 banks in the period 2017 to 2018 has decreased. The average NPL of BOOK 4 and BOOK 3 banks in December 2018 decreased by 21 bps compared to the same position in the previous year. A decrease in NPL results in higher interest income and greater liquidity. High interest income results in higher profitability. On the other hand, the decline in NPLs occurred due to smooth credit payments, thereby increasing the source of bank liquidity. Liquid assets are also not used to form a reserve for impairment losses on loans so that the liquidity reserves are higher.

Based on this research, the ROA factor is not a significant factor for banks to determine the size of the LCR. LCR for banks is a standard measurement of short-term liquidity that is predicted liquidity needed in the next 30 (thirty) days with a stress scenario. LCR is a measurement of liquidity as a reserve of liquid assets in anticipation of a crisis. ROA is an indicator of profitability generated as an effect of asset management over a long and sustainable period. The results of this study are in line with the research of Ahmad & Rasool (2017) stating that profitability has a positive and insignificant effect on liquidity because profitability is long-term while liquidity is a short-term operational fund requirement. Chaarani's study (2019) with the independent loans variable divided by totals deposits (L2) also showed that ROA had a positive and not significant effect. But the results of this study are not in line with research by Moussa (2015), Mustika & Kusumastuti (2015), Sigh & Sharma (2016), Al-Homaidi (2019) which shows that ROA has a significant effect on liquidity.

The Effect of Capital Adequacy Ratio CAR) on Liquidity Coverage Ratio (LCR)

The results of this study indicate that CAR has a negative and not significant effect on LCR. Bank capital plays an important role for the protection of depositors. Adequate capital can be allocated for payment of depositor funds in the event of business liquidation or solvency problems (Latumaerissa, 2014). This means that if a bank has large capital, liquidity reserves tend to be smaller because banks assume bank capital can be used to cover losses if there is liquidity risk. Agency theory as previously described states that with the large capital invested by shareholders, bank management tends to be less restrained in liquidity. This study shows that the capital in BOOK 4 and BOOK 3 banks in the quarterly period 2017 to 2018 did not have a significant impact to reduce the amount of liquidity. One of the causes of this condition is assumed that BOOK 4 and BOOK 3 banks in this period are more prudent in applying liquidity management to mitigate risk so that even though banks have high capital, liquidity is not significantly reduced. CAR figures do not have a significant effect on LCR also because LCR is a measurement of short-term liquidity while capital generally has an impact on long-term periods.

The Effect of Operating Costs Operating Income (OCOI) on Liquidity Coverage Ratio (LCR)

The results showed that OCOI had a positive and not significant effect on LCR. Based on The Anticipated Income Theory previously described, OCOI has a positive relationship with LCR. High interest costs on long-term deposits as a source of long-term credit funding result in higher liquidity as well. High interest costs on banks are caused by excessively high liquidity (Latumaerissa, 2014). High liquidity is assumed to be formed from long-term funds. Interest rates for long-term funds are generally higher than short-term funds.

The OCOI factor, which mainly consists of components of interest costs and interest income, is not an indicator that has a significant influence in determining the value of LCR in banks BOOK 4 and BOOK 3 in the quarterly period 2017 to 2018. This shows that the cash flow from the total interest costs and interest income interest is too small for BOOK 4 and BOOK 3 banks in this period to affect the LCR. The small interest costs at BOOK 4 and 3 banks in this period were mainly due to short-term community deposits and low-cost savings products such as savings and current accounts. LCR is assumed to be more influenced by cash flow from public deposits and loans whose value is greater while the main costs and income from managing these deposits and loans have no effect.

The Effect of Non Performing Loans (NPL) on Liquidity Coverage Ratio (LCR)

The results of this study indicate that NPL has a significant negative effect on LCR, which means that if there is an increase in NPL, it will significantly influence the decrease in LCR. The results of this study are also in line with the theory of Bloem and Gorter (2001) which states that if a bank has a high amount of NPLs, it will reduce the ability of banks to channel loans which could potentially result in reduced profits and affect the bank's reputation. This condition is likely to cause investors and depositors to withdraw bank funds, potentially resulting in a liquidity crisis.

Commercial Loan Theory as previously explained, can be interpreted that NPL is negatively related to LCR where liquidity will be disrupted by the existence of NPLs because credit payments are getting longer in term and even potentially not getting credit payments. The results of the study are in accordance with the theory. The level of NPL also has an impact on the bank's reputation where NPL is associated with the bank's reputation (Latumaerissa, 2014). If the NPL level is high then the public's trust in the bank will decrease which has the potential to encourage the public to withdraw savings. This resulted in reduced bank liquidity reserves.

Based on this study the NPL variable becomes a factor that influences the LCR value of BOOK 4 and BOOK 3 banks in the quarterly period 2017 to 2018. A high level of bank NPLs will reduce bank liquidity due to delays or no credit payments as a source of liquidity. The NPL variable is also an important factor for the bank's reputation so that if the NPL is low then the level of public trust is high to store funds in the bank so that liquidity is maintained. In addition, if the NPL is high, the bank's credit risk will be even greater and banks will be required to form a reserve for bad loans. This results in reduced liquidity.

The results of this study are in line with the study of Luvuno (2018) with independent variables L3 (Short Term Financing, Loans to Total Assets) and L4 (Loans to Deposits and Short-Term Borrowings). According to Luvuno (2018) an increase in NPLs of commercial banks in the South African country will result in a reduction in liquidity with the provision that requires the establishment of a loss loan loss reserve. This shows a negative relationship between NPL and liquidity. The results of this study are also in line with research by Mazreku (2019), Ahmad & Rasool (2017). But the results of this study are not in line with the research of Choon et al. (2013), Laurine (2013) which shows that NPL has a significant positive effect on liquidity.

Effects of Third Party Funds (TPF) on Liquidity Coverage Ratio (LCR)

The results of this study indicate that TPF has a positive and not significant effect on LCR. In terms of TPF, according to The Anticipated Income Theory can be interpreted if the TPF is high, the LCR is also high where the TPF in large amounts is a source of funding for long-term credit, which is generally credit with a large ceiling as well. This theory states that liquidity will be maintained if banks extend long-term loans with scheduled principal and interest payments. The results of this study are consistent with the theory that TPF has a positive effect on LCR but is not significant.

Banks need liquidity reserves to pay deposits (Darmawi, 2012). Banks will better maintain their liquidity reserves if there is a large increase in deposits to anticipate the withdrawal of large numbers of customers. In this case the amount of TPF has no significant effect on the LCR value of BOOK 4 banks and BOOK 3 banks in the quarterly period 2017 to 2018 assumed because the bank predicts no large withdrawals of funds so no greater liquidity reserves are needed. Bank prediction is generally based on experience, customer profiles, product criteria and general economic conditions. The TPF variable also does not have a significant effect on LCR, possibly because the TPF Bank BOOK 4 and BOOK 3 figures for the 2017 to 2018 quarterly period do not sufficiently influence the LCR without considering the credit extended to the public. As explained earlier, liquidity is influenced by two main factors, namely the amount of public deposits in the form of third party funds and loans extended to the public.

Moussa's research (2015) also shows that deposits have no effect on liquidity. Research Singh and Sharma (2016) which states TPF has a positive and significant relationship to liquidity. According to Singh and Sharma (2016) the greater TPF, the bank will tend to hold greater liquidity to anticipate the possibility of withdrawing large funds and carried out suddenly. Research by Al-Homaidi et. al (2019) also states that deposits have a positive and significant effect on liquidity.

Effect of bank size on Liquidity Coverage Ratio (LCR)

The results of this study indicate that bank size has a positive effect. Based on the theory, banks with large size require large liquidity requirements for business activities and finance assets in the form of loans distributed to the public (Luvuno, 2018). The greater number of loans to the public also poses a greater risk of liquidity in the event of default. However, the influence of bank size on BOOK 4 and BOOK 3 banks in the 2017 to 2018 quarterly period is not significant to LCR. This is likely due to BOOK 4 and BOOK 3 banks in this period being able to finance bank

business activities with a not too large liquidity reserve by considering the existence of bank capital as a buffer.

The results of research by Moussa (2015), Mustika & Kusumastuti (2015), Rizwan & Javed (2011) show that bank size has no significant effect on liquidity. The results of this study are not in line with the research of Singh and Sharma (2016) which states that bank size has a significant negative effect on liquidity. According to Singh and Sharma (2016), in general banks with a large size will have a better reputation. This reputation makes it easier for banks to obtain funds from external sources to fulfill liquidity, while smaller banks are required to maintain adequate liquidity because it is not easy to obtain funds from external parties.

V. CONCLUSIONS

5.1 Conclusions

conclusions that can be drawn from the results of research and discussion that has been done are:

1. Return On Assets (ROA) has a positive but not significant effect on Liquidity Coverage Ratio (LCR)
2. Capital Adequacy Ratio (CAR) has a negative but not significant effect on Liquidity Coverage Ratio (LCR)
3. Operating Costs to Operating Income (OCOI) have a positive but not significant effect on Liquidity Coverage Ratio (LCR)
4. Non Performing Loans (NPL) have a negative and significant effect on Liquidity Coverage Ratio (LCR)
5. Third Party Funds (TPF) have a positive but not significant effect on Liquidity Coverage Ratio (LCR)
6. Bank size has a positive but not significant effect on Liquidity Coverage Ratio (LCR)

5.2 Limitations

Limitations in this study are:

1. The research data period is a short period that is quarterly covering the period 2017 to 2018. This is because the independent variable LCR is an indicator of liquidity measurement that is required to be published by the Financial Services Authority Bank starting the March 2016 period for banks in the BOOK 4 category and the September 2016 period for BOOK category banks 3.
2. Limited references to previous studies with independent variables such as LCR. This is likely due to the LCR being a standard measure of short-term liquidity regulated by BASEL with the issuance of final documents in 2013, while in Indonesia the LCR is regulated by the FSA with the issuance of POJK in 2015.

5.3 Implications

Based on the conclusions and limitations mentioned earlier, the implications of this study are:

1. For further researchers, it is necessary to explore other factors that affect LCR so that the coefficient of determination is greater. Other variables that are thought to affect LCR include cash flow from community

- deposits / loans, the difference between deposits and loans.
2. For banks, to maintain liquidity stability with the LCR indicator it is advisable to maintain asset quality by applying the precautionary principle in lending so that the NPL number can be suppressed.
 3. For investors, in investing in banks with good liquidity it is advisable to consider NPL figures because based on NPL research a significant effect on liquidity.

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